

Director's Corner – by Wim Leemans, AFRD Director

During my first three months as Division Director I have been working on restructuring and reorganizing the Division and want to inform you on some of the steps that have been taken.

Dr. Soren Prestemon has been appointed as Deputy Division Director of Technology for AFRD and Dr. Eric Esarey as Senior Science Advisor. Soren will assist me directly in working with the Program Heads and scientists to chart out a path for the Division in the area of technology. Soren will remain active at the same time working on superconducting magnets. Relying on three decades of experience and expertise in diverse areas such as plasma physics, fusion science, accelerators, and radiation sources, Eric will provide advice on the broad range of science opportunities that the Division pursues through its various Programs, while remaining as Deputy Head for the LOASIS Program.

Dr. Steve Gourlay has returned to the Superconducting Magnet Program as Program Head. The Program has been one of the crown jewels of the Department of Energy's Office of High Energy Physics accelerator R&D portfolio. Steve and Soren, with their colleagues, are working out an ambitious and exciting course of innovation for state-of-the-art magnets and associated technology, including hopes for further world performance records. A review of the programmatic goals will be held May 19-20.

Dr. Peter Seidl has returned to the Ion Beam Technology and Fusion Science program. Peter has been invaluable to the Division in his role as Deputy for Steve and I would like to extend my thanks for his outstanding effort. Peter will now work on capitalizing on the new funding that has been obtained from the DOE Office of Fusion Energy Sciences with NDCX-II. Program Head Thomas Schenkel and his colleagues are laying out an exciting new course that we hope will result in continued future funding for that Program.

The operations side of the Division is being reorganized to maximize efficiency, and we are interviewing internal laboratory candidates to fill the position of Deputy for Operations in the next few weeks.

We have much work ahead of us to ensure a continued strong and healthy future for the Division. With the passion we all have for our work, I am confident that we will deliver on our promises to our funding agencies. Through strong interactions of our scientists, engineers and technical support, as well as our excellent administrative support and cooperation with other Divisions, I hope we will create new initiatives and directions for the future to ensure a strong future for AFRD and the Lab.

Finally, we are all saddened by the passing of Andy Sessler, who over the years worked with many people in AFRD. Andy's long list of accomplishments is well known to the Division, the Laboratory and beyond. I would like to thank former Division director Bill Barletta for sharing his memories of Andy with us.

Remebering Andy Sessler – by Bill Barletta

I first met Andy Sessler on the sunny beach of La Jolla Cove in 1981 while we both were participating in a workshop to evaluate the possibility of crafting a high current electron betatron – potentially more compact than the induction linacs invented at Livermore and transplanted into Berkeley as part of the heavy ion inertial fusion program led by Denis Keefe. Berkeley's device was built as part of a program of collective acceleration of ions using rings of high current electrons – the electron ring accelerator. Also in La Jolla were Donald Kerst, who invented the betatron, Denis Keefe, Andy Faltens, Jack Peterson, and Lloyd Smith from Berkeley; Andy's first PhD students – Kelvin Neil and Sidney Putnam; several of us from Livermore, and several other luminaries in accelerator science.

While he was laboratory director at Berkeley, Andy had almost single-handedly dashed the hopes of collective ion acceleration in electron rings by his discovery of the negative mass instability. Now, a few years later, Andy was recovering from surgery to remove a benign brain tumor. Not only had he learned to run and walk again, he also had to master again the routine mathematical tools of theoretical physics, which had to survive years of neglect during his Laboratory Director's term at Berkeley. For me, a still fairly young physicist who had witnessed what I considered mind-numbing effects of laboratory directorship in the Livermore Director, Andy's forceful presence (which he credited to a regime of intellectual retraining as well as physical rehabilitation) was a revelation and an inspiration. Neither surgery nor bureaucracy could overcome his will to excel.

The La Jolla event led to a second workshop at Berkeley and finally to an experimental betatron variant at the Naval Research Laboratory in Washington, D.C. Unfortunately the NRL group found it impossible to overcome serious difficulties associated with the Laslett space charge tune shift and the negative mass

instability at beam injection. The induction linac seemed ideal for accelerating the multi-kiloampere beams that would be essential to a seminal experiment in free electron laser (FEL) physics.

Two years later, Andy and Don Prosnitz were co-PIs of a Berkeley-Livermore experiment on Livermore's new induction linac, the Experimental Test Accelerator (ETA). Their experiment, designed to demonstrate the very first high gain operation of a FEL, was a great success, measuring a gain of one e-folding per wiggler period, even though Andy was forbidden from touching dials in the ETA control room. While many of us at Livermore saw this success as the first step towards a giant, "Star Wars" laser, Andy was never seduced by the Dark Side of the Force. Instead, he envisioned the FEL as a component in a two-beam accelerator for a linear collider. This idea morphed and matured into what has become the CLIC concept. Meanwhile, the seed of collaboration of the Berkeley-Livermore team with SLAC on the linear collider blossomed into Livermore's partnering to construct the PEP-II B-factory.

Shortly afterward, while I was director of the Beam Research Division at Livermore, I was asked by Ed Lofgren – head of Berkeley's Staff Committee – to write a letter of support for Andy's promotion to become Berkeley's first Distinguished Staff Scientist. How ironic an assignment that was, and it grew even more so several years later, when as AFRD Director I had to explain to Andy that the expectations for Distinguished Scientists are so high that even he could not exceed them. (After all, Andy was the only one at that time.) With his characteristic good humor, Andy just smiled and said, "Of course".

In the late 1980's I had the pleasure of working with Andy on the design of X-ray free electron lasers, betatron radiation from high-energy beams in plasma channels, and early studies of muon colliders. At one point, Andy explained to me that he was an impressionist as a physicist; if so, he was the Marc Chagall of accelerator physics. Besides physics fun, there were more mundane adventures such a clandestine climb in very late afternoon to swim in the Grotta Azzurra in Capri.

When I came to Berkeley in 1993 as AFRD Director, Andy became the advisor I could always count whether in matters of physics or of management. Andy had a deep and abiding concern for the accelerator physics community and for the health of AFRD in particular. He emphasized the need for a strong program in fundamental beam physics as embodied in the Center for Beam Physics. Indeed, my last collaboration with Andy early this year was in preparing a white paper for P5 calling for a renewed commitment to fundamental accelerator research in DOE's Office of High Energy Physics.

Andy taught me that "you will know that you are managing well when your management is not noticed". He was a continual inspiration, a trusted confidant, a wise councilor, a patient mentor, and a wonderful friend. I will miss him greatly.

Daughters and Sons to Work Day



Ethan Robin



Alexander Steier

April 24th was Daughters and Sons to Work Day. The Lab's Workforce Development and Education Office runs programs for children 9 years and up to experience hands-on science. Some children of AFRD staff participated. Here is what they had to say:

Ethan Robin (11 years): Daughters and sons to work day was really fun! I had been to daughters and sons to work day before, so I expected a blast! I love the liquid nitrogen, which I know was my favorite one!

Alexander Steier (12 years): My day at my parents' workplace was interesting, fun, and most of all educational. The electricity workshop was fun and it taught me how to make an electrical circuit. It was fun because you could install a

buzzer, a fan, and a light. At the science fair I liked the Maglev train because of the science behind how it levitates. In the Volcano workshop it was fun to let different types of volcanoes either leak magma at the top or explode. All in all I learned a lot of science and had fun doing so.

The event is only possible thanks to a large number of volunteers. A big thank you to AFRD staff Warren Byrne, Joe Chew, Martha Condon, Dan Dietderich, Dee Pickett, Ian Pong, Ina Reichel, Etienne Rochepault, and Pat Thomas for helping.

A big thank you to Bill Barletta for sharing his memories of Andy Sessler. Thank you to the junior scientists Ethan Robin and Alexander Steier for their contributions; to Mary Connolly and Dave Robin for the photos from DSTWD; and to Joe Chew and Sam Vanecek for editing/proofreading.

"Get to Know Your Colleague" and "Link of the Month" will return in June.

Please send suggestions for news items, links or "get to know your colleague" to Ina Reichel (IReichel@lbl.gov).